

## REMARKS

Reconsideration of this patent application is respectfully requested in view of the foregoing amendments, and the following remarks.

The amendments to this patent application are now discussed as follows.

On Page 3 of the Office Action, the Patent Examiner has objected to the Abstract of the Disclosure because it repeats the independent claim 1 without adhering to the proper content and format.

In response to this objection, the Abstract was amended to be in narrative form and to be limited to a single paragraph on a separate sheet within the range of 50 to 150 words.

On Page 5 of the Office action, the Patent Examiner has objected to the disclosure due to certain informalities. Specifically, the Specification fails to include the Section Headings required by U.S. practice.

In response to this objection to the Specification, the Specification is now being amended on Pages 1, 2, 3, and 4 in order to provide the required Section Headings.

Also the Specification is being amended on Page 5 in order to recite the phrase "outside shaft 12."

Also on Page 5 of the Office Action, the Patent Examiner has objected to claims 2, 3, 6, and 10 due to certain informalities.

Claim 2 was objected to because it recites the limitation "cams (1, 2, 4) to be mounted are spaced an axial distance apart" in lines 2 and 3 which seems to be incorrect and should be changed to read that the cams are equal distance apart in an axial direction.

In response to this objection, claim 2 was amended to recite that the cams (1, 2, 4) are equal distance apart in an axial direction, and to delete that the cams to be mounted are spaced an axial distance apart.

Claim 3 was objected to because in line 5 the limitation "inside shaft (12)" should read "inside shaft (11)."

In response to this objection, it is respectfully pointed out that in claim 3 the "inside shaft" is denoted as "(11)."

However, in claim 4, the incorrect reference numeral "(12)" was changed to "(11)" for the "inside shaft."

Claim 6, in line 5 was objected to because the limitation "wherein least two screws (5)" should read "wherein at least two screws (5)."

In response to this objection, claim 6 was amended to recite "at least two screws."

Claim 10, in line 8 was objected to because the limitation "second cams (4)" should read "second cam(4)."

In response to this objection, claim 10 was amended to recite "second cam (4)."

On Page 6 of the Office Action, the Patent Examiner has rejected claims 1-10 under 35 U.S.C. 112, second paragraph, as being indefinite. In response, claims 1 to 10 have been rewritten in order to comply with U.S. practice in U.S. claim format.

Claims 1-10 were objected to because they lack positive manipulative steps that conform to the standard U.S. method format.

In response to this objection, independent claim 1 has been cancelled without prejudice, and has been replaced by two newly added independent claims 11 and 12.

Also, the dependency of claims 2-10 has been revised in order to depend now on newly added independent claim 11, rather than to depend from cancelled independent claim 1.

Because new independent claim 12 has been added, new claims 13-21, which correspond respectively to originally filed claims 2-10 have been added. While newly added dependent claims 13-21 correspond to originally filed claims 2-10, while the new claims 13-21 depend from new independent claim 12, amended claims 2-10 depend upon new independent claim 11.

On Page 7 of the Office Action there were objections to claim 1 that have now been rendered moot because claim 1 has been cancelled and replaced by new claims 11 and 12.

On Page 7 of the Office Action, claim 2 was objected to

because it recites the limitation "such axial spacings" in line 5. There is insufficient antecedent basis for this limitation in the claim.

In response to this objection, the word "such" has been cancelled from before "axial spacing" in amended claim 2.

On Page 7 of the Office Action, claim 2 was objected to because it recites the limitation "the spacers (3)" in lines 5-6. There is insufficient antecedent basis for this limitation in the claim.

In response to this objection, claim 2 was amended to cancel the word "the" before "spacers."

On Page 8 of the Office Action, claim 3, was objected to because in line 5, the limitation of "with an opening larger than" may need to be changed to "with an opening with a diameter larger than" and the limitation "whereby this is true" in line 7 is indefinite.

In response to these objections, claim 3 was amended to recite "with an opening with a diameter larger than." The other terminology would be understood by a person skilled in the art,

since the "larger diameter" has been clarified.

On Page 8 of this Office Action, claim 3 was objected to because it recites the limitation "the spacers (3)" in line 4. There is insufficient antecedent basis for this limitation in the claim.

In response to this objection, claim 3 was amended to cancel the word "the" before "spacers."

On Page 8 of this Office Action, claim 4, was objected to because it recites in lines 7-8, the limitation of "the fitting borehole (7) is created while the respective second cam (4) is within the machining module." It is unclear as to whether the machining of the borehole is created while the machining module is mounted on the shaft or not and if so, is it prior to the detachable joining of the first and second cams being separated or after the separation?

In response to this objection, one skilled in the art would understand this terminology.

On Page 8 of the Office Action, claim 5 was objected to because it recites the limitation "the detachable joining" in

line 4. There is insufficient antecedent basis for this limitation in the claim.

In response to this objection, claim 5 was amended to change "the" to "a" before "detachable joining."

On Page 8 of the Office Action, claim 9 was objected to because it recites the limitation "the screws (5)" in line 3. There is insufficient antecedent basis for this limitation in the claim.

In response to this objection, claim 9 was amended such that the word "the" was cancelled before the word "screws."

For all of the above reasons, the Abstract, the Specification, and all the claims, are firmly believed to be in complete compliance with all the requirements of 35 U.S.C. 112. Withdrawal of this ground of rejection is respectfully requested.

On Page 9 of the Office Action, the Patent Examiner has rejected claims 1 and 8 under 35 U.S.C. 102(b) as being anticipated by *Methley* (U.S. Publication No. 2002/0170514 A1).

On Page 11 of the Office Action, the Patent Examiner has

rejected claim 4 under 35 U.S.C. 103 as being unpatentable over *Methley*.

On Page 12 of the Office Action, the Patent Examiner has rejected claims 2 and 3 under 35 U.S.C. 103(a) as being unpatentable over *Methley* in view of *Arnold et al* (U.S. Patent No. 5,201,246).

The Applicants comment upon the prior art rejections of the claims as follows.

The present invention is directed to a method for manufacturing a camshaft having individual cams in predetermined angular positions in relation to one another on a shaft

wherein the following manufacturing steps are performed in chronological order:

- (1) connecting the cams by detachable connecting means to form a detachably assembled machining module wherein the cams are aligned in relation to one another in predetermined fixed angular positions,
- (2) completely machining all cam contours of the module,
- (3) mounting the machined module on the shaft,
- (4) individually connecting each of the cams of the module to the shaft,



- (5) detaching and removing the connecting means.

The present invention is also directed to a method for manufacturing a variable camshaft having an outside shaft and an inside shaft with first cams connected to the outside shaft and second cams connected to the inside shaft,

wherein the following manufacturing steps are performed in chronological order:

- (1) connecting the cams by detachable connecting means to form a detachably assembled machining module wherein the cams are aligned in relation to one another in predetermined fixed angular positions,
- (2) completely machining all cam contours of the module,
- (3) mounting the machined module on the outside shaft,
- (4) individually connecting each of the cams of the module to its respective shaft,
- (5) detaching and removing the connecting means.

Original independent claim 1 has been replaced by new independent claims 11 and 12, with new claim 11 referring to a method of manufacturing an invariable camshaft, and with new claim 12 referring to a method of manufacturing a variable camshaft. The original claim 1 referred to both types of camshafts.

The object of the present invention is to eliminate remachining of the contours of the individual cams on a completely assembled camshaft. This means, that the final machining of the cams must be performed before the assembly of the cams and the respective shaft(s).

An important feature of the present invention is to connect the cams by detachable connecting means to form a detachable single piece module for machining procedures. Having performed the machining procedure the finished module is placed on the respective (outside) shaft for individually connecting each cam to its respective shaft. Thereafter the connecting means are removed leaving the cams individually connected to its respective shaft(s). No further machining of the now completed camshaft has to be performed.

*U.S. Publication No. 2002/0170514 A1 (Methley)* shows a variable camshaft having an outside shaft (14) and an inside shaft (12) which is rotatable in relation to the outside shaft (14). The outside shaft (14) comprises cams (18a, 18b) fixed to the outside shaft (14). The inside shaft (12) is fixedly coupled to a cam assembly (16a, 16b) which is rotatably arranged on the outside shaft (14) and fixed to the inside shaft (12) via a pin (20) which is fixed (clamped) within the inside shaft (12) by a

cylindrical element (22) expanding the outer diameter of pin (20). Please see paragraph [0028].

The subject matter of this *Methley* document is the method of fixation of said pin (20) by insertion of the said cylindrical element (22).

*U.S. Patent No. 5,201,246 (Arnold et al)* refers to machining of a completely assembled camshaft. Please see column 4, lines 50 and 51.

For all the reasons set forth above, none of the prior art references provide an identical disclosure of the claimed invention. Hence, the present invention is not anticipated under 35 U.S.C. 102, but is patentable under 35 U.S.C. 103, over all the prior art applied by the Patent Examiner.


Withdrawal of these grounds of rejection is respectfully requested.

A prompt notification of allowability is respectfully requested.

It is believed that no fee is required for this Amendment. However, if there should be any additionally required fee for adding claims, the Commissioner of Patents and Trademarks is hereby authorized to charge any additional fee, or to credit any overpayment, to our Deposit Account No. 03-2468.


Respectfully submitted,  
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Enclosure: Petition for One Month Extension of Time-Large Entity

I hereby certify that this correspondence is being deposited with the U.S. Postal Service as first class mail in an envelope addressed to: Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on July 15, 2010

  
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